

tically significant differences were seen in all groups. The average follow-up was 11 months after operation.

A recurrence rate of 3.5 percent has been noted after use of CMF and bacille Calmette Guérin (BCG), with or without an irradiated allogenic tumor cell vaccine (TCV). To date 92 patients have been treated with CMF, CMF plus BCG, or CMF, BCG and TCV. The average follow-up is 13 months after operation (1 to 30 months). In eight patients (9 percent) there was treatment failure (six recurrences and two new primaries) and three died from metastasis.

The early results from these studies are encouraging. However, several questions remain unanswered. Will the delay in recurrence increase the cure rate enough to offset the side effects, inconvenience and expense of adjuvant therapy? What are the long-term side effects of prolonged chemotherapy? These and other questions suggest that adjuvant chemotherapy is still experimental and should be carried out in carefully controlled situations where the long-term effects can be evaluated.

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Endoscopic Exploration (Choledoscopy) of the Biliary System at Operation

BECAUSE THE incidence of retained stones after biliary operation depends on a surgeon's success in removing all stones during the operation, a technique has been developed to assist surgeons to locate stones at operation.

A miniature right angled telescope was designed using the Hopkins rod-lens system. Total diameter of this instrument is 5 × 3 mm including image and light transmission as well as irrigation. The sterilized choledoscope is introduced into the hepatic and common bile ducts at operation. This instrument allows a surgeon to see inside the bile ducts and manipulate under visual control with great precision. The lumen of the major ducts and even tertiary biliary ducts in the liver can be visualized. Small stones not seen by cholangiography can be located and removed under

visual control. The first preliminary report of a multi-institutional study shows that the use of choledoscopes decreased the number of retained stones from between 8 and 10 percent to 2.7 percent in primary choledocholithotomies.

Choledoscopy has become an important tool in surgical procedures especially in stone disease, but it also is useful for recognizing obstruction by tumor and making biopsy under visual control possible.

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Jejunioileal Bypass for Obesity

THIS FOCUS upon the risks of jejunioileal bypass for the treatment of massive obesity is intended to provide perspective without denying the substantial benefits of the operation.

Published operative mortality rates are in keeping with those of other major operations (3 to 6 percent), but the experience of a cross section of the medical community with this elective operation is not fully tabulated. Complications such as wound infection, hernias, intestinal obstruction, pulmonary embolus, anastomotic leak and stress bleeding are particularly difficult to remedy when they occur in morbidly obese patients.

In all patients in whom this operation is done, there are postoperative sequelae which require continuing medical follow-up. These include hepatic dysfunction, hypokalemia, hypocalcemia, anemia, chronic diarrhea, renal calculi and significant arthralgias. Reoperation is required in approximately 10 percent of the patients, either because of inadequate weight loss or because of intolerable malnutrition which may be associated with hypoproteinemia and jaundice. These sequelae are seen with varying incidence and severity; some, such as hepatic dysfunction, may be transient. In our four-year experience, the operative mortality has been 3 percent. There have been few complications and almost all patients continue to express satisfaction. However, at the end of the first postoperative year, only half our patients are free of significantly adverse sequelae from a physician's viewpoint.

It is currently not clear that the significant benefits of jejunioileal bypass for obesity outweigh the substantial risks. A new complication of "colonic

pseudo-obstruction" is being recognized increasingly. The operation should be offered by interdisciplinary teams of surgeons and physicians committed to critical review of results and long-term intensive follow-up.

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Prevention of Venous Thromboembolism

VENOUS THROMBOEMBOLISM is an important cause of morbidity and mortality among patients in hospital. That 70 to 80 percent of patients who die of massive pulmonary embolism do so within two hours of the onset of symptoms emphasizes the importance of prevention. Recent large scale studies using radioactive fibrinogen to identify deep leg vein thrombosis (DVT) have shown the magnitude of the problem, identified high risk groups and proven the efficacy of prophylactic measures. At high risk for the development of DVT are patients over 40 years old in whom any operation is done that will keep them in bed for more than two to three days; patients with leg trauma (especially elderly patients with fractured femoral necks), obesity, malignancy or a previous episode of DVT, and women taking oral contraceptives. Results of several prospective, randomized clinical trials have shown that in patients in whom abdominal or thoracic surgical procedures are done, most venous thrombi detected by ¹²⁵I fibrinogen scan can be prevented by the administration of low (mini) dose heparin. The value of this prophylactic method in major hip operations or suprapubic prostatectomy has not been settled.

Since pulmonary embolization is the primary reason for prophylactic anticoagulation, and since the incidence of DVT is at least ten times greater than the incidence of major pulmonary embolism, some authors have questioned the significance of these findings. In a recently published international study, however, it was found that low dose heparin prophylaxis significantly reduces deaths from pulmonary embolism in postoperative patients.

The technique involves the subcutaneous administration of 5,000 units of sodium heparin every 8 to 12 hours before operation and continuing for five to ten days postoperatively or until the patient is fully ambulatory. Heparin administered in this fashion does not significantly change the results of coagulation tests. Its mechanism of action is thought to be inhibition of activated factor X, which plays a key role in both the intrinsic and extrinsic clotting systems. There has been a slightly increased incidence of wound hematoma associated with the use of low dose heparin, and a slight increase in transfusion requirements.

Contraindications to the use of prophylactic heparin are similar to those for therapeutic anticoagulation. Other methods of prophylaxis which have been shown to be effective in reducing the incidence of DVT include oral administration of anticoagulants, use of pneumatic compression or galvanic stimulation of the calf muscles during operation, and infusion of dextran, but none of these is as effective as low dose heparin administration. Therapy with low dose heparin is also the simplest and cheapest method, since laboratory control is not necessary.

It has been estimated that the widespread use of this regimen would save between 4,000 and 8,000 lives each year in the United States alone, and surgeons should therefore be encouraged to use it in high risk patients over the age of 40 in whom major abdominal, pelvic or thoracic surgical procedures are done.

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Tumor-Estrogen Binding Determination in Patients with Breast Cancer

WHEN SUCCESSFUL, ablative endocrine procedures can give dramatic responses in patients with metastatic breast cancer. The combined early use of simultaneous adrenalectomy and oophorectomy with multiple drug chemotherapy may offer the most dramatic and prolonged response for these patients. Although in skilled hands adrenalectomy can be done with safety and excellent toleration, it is too major a procedure unless a significant response rate is achieved.